

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

Ex parte PAPU D. MANIAR

---

Appeal No. 96-2697  
Application 08/215,170<sup>1</sup>

---

ON BRIEF

---

Before MARTIN, JERRY SMITH and BARRETT, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134  
from the examiner's rejection of claims 1-4 and 14-26. Claims

---

<sup>1</sup> Application for patent filed March 21, 1994. According to appellant, this application is a continuation of Application 07/807,327, filed December 16, 1991.

Appeal No. 96-2697  
Application 08/215,170

5-7 have been allowed by the examiner. Claims 8-13 have been cancelled.

The disclosed invention pertains to a semiconductor device, and particularly, to a layer of spin on glass (SOG) overlying the substrate and device layers of the semiconductor device. The invention is specifically directed to the composition of the SOG.

Representative claim 1 is reproduced as follows:

1. A semiconductor device comprising:

a substrate material;

a plurality of device layers overlying the substrate material;

a layer of a spin on glass also overlying the substrate material, the spin on glass comprising:

on the order of 0% to 20% by volume of tetraethylorthosilicate (TEOS);

on the order of 0.01% to 20% by volume of tetraethylorthogermanate (TEOG);

on the order of 0% to 1% by volume the equivalent of nitric acid ( $\text{HNO}_3$ );

on the order of 70% to 85% by volume of alcohol; and a remaining balance of water, wherein the ratio of volume of water to the sum of volume of TEOS and TEOG is less than 0.80.

Appeal No. 96-2697  
Application 08/215,170

The examiner relies on the following reference:

Lehrer	4,654,269	Mar. 31, 1987
--------	-----------	---------------

Claims 1-4 and 14-26 stand rejected under 35 U.S.C. § 112, first paragraph, as being based on an inadequate disclosure. Claims 1-4 and 14-26 also stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Lehrer taken alone. The Section 103 rejection is a new ground of rejection in the examiner's answer which reasserts a rejection that was made and dropped during earlier prosecution of this invention.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

#### OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner, the arguments in support of the rejections and the evidence of obviousness relied upon by the examiner as support for the obviousness rejection. We have, likewise, reviewed and taken into

Appeal No. 96-2697  
Application 08/215,170

consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the disclosure in this application describes the claimed invention in a manner which complies with the requirements of 35 U.S.C. § 112. We are also of the view that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 1-4 and 14-26. Accordingly, we reverse.

At the outset, we note that appellant has made several arguments directed to the prosecution of this application and the parent application. Specifically, appellant argues that added material to the disclosure which is now being viewed as new matter was specifically approved by a different examiner during the course of earlier prosecution. Appellant also argues that the prior art rejection was made by a different

Appeal No. 96-2697  
Application 08/215,170

examiner during the course of earlier prosecution and was overcome by appellant. Appellant basically argues that a new examiner should not be permitted to reassert all the rejections which were previously overcome by appellant during prosecution before other examiners. Although we are sympathetic to appellant's frustration caused by the course of prosecution in this application and the parent application, our jurisdiction does not extend to these matters. Our jurisdiction is limited to a consideration of the propriety of rejections on the merits. The issues raised by appellant regarding the prosecution of this application should have been raised by appropriate and timely petition to the Commissioner.

We consider first the rejection of claims 1-4 and 14-26 under the first paragraph of 35 U.S.C. § 112. This rejection resulted from an amendment to the specification and the claims which identified the relationship of the composition of materials in the SOG as specific values of molar ratios. The original specification and claims only referred to the components as having respective percentages by volume of the total mixture. The examiner's rejection asserts

Appeal No. 96-2697  
Application 08/215,170

that there is no basis for these ratio values in the original disclosure [answer, pages 2-3]. Appellant argues that the recitation of molar values is a straightforward conversion of disclosed percent volume amounts to equivalent molar amounts.

The rejection for lack of support relates to the written description requirement of 35 U.S.C. § 112. The purpose of the written description requirement is to ensure that the applicants convey with reasonable clarity to those skilled in the art that they were in possession of the invention as of the filing date of the application. For the purposes of the written description requirement, the invention is "whatever is now claimed."

Vas-Cath, Inc. v. Mahurkar, 935 F.2d 1555, 1564, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991).

Appellant's arguments regarding the equivalence of the disclosed and claimed molar ratios to the percentage volume ratios are not relevant to the claims which are presently before us. No molar ratios are recited in the claims. The claims simply recite components by percentage of volume and

ratios according to volumes. The original disclosure clearly disclosed all the volume percentages currently being claimed. The only question is whether the specific values of volume ratios are supported by the original disclosure. Using claim 1 as an example, we will show that the volume ratio recited therein is clearly supported by the original disclosure and the claim itself.

The volume percentages of the components recited in claim 1 are exactly the same as set forth in the original disclosure [Summary of the Invention, page 3]. The preferred embodiment for the various components is set forth on page 6 of the original disclosure. The preferred embodiment as described at page 6 uses 10% by volume TEOS, 10% by volume TEOG, 0.5% by volume nitric acid, 78% by volume alcohol, and 1.5% by volume water. Claim 1 recites that the ratio of volume of water to the sum of volume of TEOS and TEOG is less than 0.80. Since the components of the mixture are already given in volume percentages, the volume ratio is a straightforward substitution. More particularly, for the preferred embodiment, the water is 1.5% by volume of the total

Appeal No. 96-2697  
Application 08/215,170

mixture, and the sum of TEOS and TEOG is 20% by volume of the total mixture. Therefore, the ratio of volume of water to sum of volume of TEOS and TEOG is 1.5% divided by 20% which equals 0.075.

Thus, the originally disclosed preferred embodiment clearly meets the ratio limitation of less than 0.80 as recited in claim 1. In fact, the range of volume percentages in the claims are so large that the ratio of one component to another can obviously vary over a very large range as well. The original disclosure and claims clearly allowed for the selection of components by volume which would meet the specific claimed ratios recited in the claims. The original disclosure permitted ratio values to be much larger than the specific ratios now being claimed. In other words, the present claims represent a narrower range of values than was included within the original disclosure. We find that the volume percentage ranges as disclosed and claimed would permit ratios to cover a wide spectrum of values including the values set forth in the claims. We also find that the preferred embodiment of the disclosure meets the values



Appeal No. 96-2697  
Application 08/215,170

recited in claim 1. It is not necessary that the specification specifically identify all claimed narrower values which fall within the broader range as set forth in the original disclosure. Therefore, as a factual matter, persons skilled in the art would consider the ratios recited in the claims to be part of appellant's original disclosure. Note In re Wertheim, 541 F.2d 257, 264, 191 USPQ 90, 98 (CCPA 1976). Under the facts of this case, as long as the presently claimed values fall within the range of values as originally disclosed, appellant has satisfied the written description requirement because he was clearly in possession of the invention at the time of filing the application.

To the extent that the examiner's rejection is based on the fact that the identical language of the claims does not appear in the original disclosure, we observe that a difference in language between the disclosure and the claims is not alone controlling. Written description support under the first paragraph of Section 112 does not require literal support for the later claimed invention. Id. The invention recited in the appealed claims represents a narrower range of

Appeal No. 96-2697  
Application 08/215,170

values from the

values permitted in the disclosure. Appellant is entitled to claim the invention as broadly as the prior art permits.

In summary, the specific ratio values recited in the appealed claims clearly result from a selection of components within the range of values permitted by the original disclosure. Therefore, we do not sustain the rejection of the claims under the first paragraph of 35 U.S.C. § 112.

We now consider the rejection of claims 1-4 and 14-26 under 35 U.S.C. § 103. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine

prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

The examiner cites Lehrer as a teaching of making an SOG for a semiconductor device which is composed of TEOS, TEOG, alcohol, nitric acid and water. The respective amounts of these components in Lehrer are set forth in grams of each constituent in the mixture [columns 9-10]. Although the examiner asserts that Lehrer teaches the percentages of TEOS

Appeal No. 96-2697  
Application 08/215,170

and TEOG recited in the claims, the examiner also indicates that it would have been obvious to the artisan to optimize the SOG composition to meet the claimed invention [answer, pages 3-4].

This rejection was made earlier in the prosecution of this application, but it was removed when appellant submitted arguments and a declaration to support his position that the mass values set forth in Lehrer could not meet the composition percentages recited in the appealed claims. The rejection has been reintroduced in the answer without any discussion of the arguments and evidence previously submitted by appellant. Appellant argues that the examiner does not provide a prima facie case of obviousness since the rejection does not respond to the arguments and evidence provided earlier by appellant [reply brief, pages 2-3]. Appellant also argues that the claimed percentages do not result from a mere obvious optimization of the Lehrer teachings.

We agree with appellant for the reasons presented by him. Although it would have been easier to use density values to simply convert the grams in Lehrer to volume percentages,

Appeal No. 96-2697  
Application 08/215,170

we can find nothing wrong with appellant's effort to convert his invention and Lehrer to equivalent molar values.

Appellant's calculations and our independent calculations verify that the mass values set forth in Lehrer cannot satisfy the composition recitations as set forth in the appealed claims. Thus, the examiner's position that Lehrer teaches the percentages recited in the claims is clearly erroneous.

We also agree with appellant that there is no support for the examiner's conclusion that the claimed invention is an obvious optimization of the Lehrer teachings. Since the claimed amounts fall outside of the ranges suggested by Lehrer, the claimed invention is different from Lehrer rather than an optimization of Lehrer. An optimization of Lehrer would be to select the best values within the ranges taught by Lehrer. Lehrer teaches away from the values claimed by appellant. Therefore, the examiner has not made a prima facie case of the obviousness of the invention as set forth in the appealed claims. Accordingly, we do not sustain the rejection of the claims as being obvious over the teachings of Lehrer.

In conclusion, we have not sustained either of the

Appeal No. 96-2697  
Application 08/215,170

examiner's rejections of the claims on appeal. Therefore, the decision of the examiner rejecting claims 1-4 and 14-26 is reversed.

REVERSED

	JOHN C. MARTIN	)	
	Administrative Patent Judge	)	
		)	
		)	
		)	
	JERRY SMITH	)	BOARD OF
PATENT	Administrative Patent Judge	)	APPEALS AND
		)	INTERFERENCES
		)	
	LEE E. BARRETT	)	
	Administrative Patent Judge	)	
JS/cam			

Maurice J. Jones  
Motorola, Inc.  
Intellectual Prop. Dept. Suite 500  
505 Barton Springs Road  
Austin, TX 78704